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AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No.: 09/424,300

REMARKS

This response follows an Office Action of May 4, 2001 rejecting claims 1-4 and holding that claims 5-7 are otherwise allowable. The Applicant notes with appreciation that the Examiner has received the priority document under 35 U.S.C. § 119.

The Applicant also notes with appreciation that the Examiner has considered the prior art cited in the specification.

With respect to the objection to the specification as apparently referencing a claim, the Applicant respectfully traverses the holding. Pages 4 and 5 set forth the antecedent basis and literal support for the claims as originally filed. The text is not written as claims but rather, as features or aspects relating to the invention. That is, these aspects are set forth as four different characteristics of the steel wire and three different characteristics of the method of manufacture. It is believed that that disclosure is proper because it does provide clear original support for the claims in the specification.

Given the holding of allowability of claim 5, the Applicant has rewritten that claim as new independent claim 8. This is a method claim incorporating claims 1 and 5. The dependency of original claims 6 and 7 has been changed.

Correspondingly, the Applicant has added product claims in the form of steel wire claims 9-12. Independent claim 9 is essentially claim 5 rewritten as a product claim. It is noted that the application as filed have both product claims and method claims.

Claim 1 has been amended to include a portion of outer limitations of claim 4. Specifically, the claim has been amended to recite "said steel wire preform to have a minimum radius of curvature of 10 to 60 times its diameter".

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It is respectfully contended that the claims in their amended form, 1-4 and new claims 8-12 also directed to the steel wire product are distinguishable over Kazama. Clearly, with respect to the processing considerations incorporated into claim 9, it is clear that Kazama cannot meet, infer, or suggest any of those criteria.

Secondly, with respect to the preforming conditions added to claim 1, are the minimum radius of curvature of 10-60 times its diameter is considered relatively severe for a steel filament, but one, which is employed when steel coils are manufactured as reinforcement for rubber articles. When such a radius of curvature is provided to the filament as a function of preforming, within the conventional steel cord technology ductility is deteriorated to a significant extent and that quality of the wire is further deteriorated by heating within the rubber.

Kazama does not disclose such a preformed radius of curvature and indeed, the Examiner's statement of rejection, while including claim 4 does not deal with that facet of Applicant's claims.

Additionally, reference is made to Applicant's example as set forth in Table 8 in which the minimum radius of curvature was provided for filaments used in both core and sheath. Kazama is totally silent concerning this claimed requirement. Consequently, not only is the issue of anticipation rendered moot by this Amendment to claim 1, but additionally, the claims define structure clearly unobvious when the prior art is considered in its entirety.

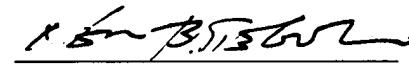
Thus, in addition to claims 5 and 7, it is respectfully contended that the remaining claims here are also allowable.

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Should the Examiner have any questions, he is requested to contact the undersigned attorney of record at the local exchange listed below.

Applicant hereby petitions for any extension of time which may be required to maintain the pendency of this case, and any required fee, except for the Issue Fee, for such extension is to be charged to Deposit Account No. 19-4880.

Respectfully submitted,


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APPENDIX
VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

The claims are amended as follows:

1. (Amended) A steel wire having comprising a wire diameter ranging from 0.10mm to 0.40mm obtained by subjecting a high-carbon steel wire material having a carbon content ranging from 0.70% to 0.90% in weight to heat treatment and wire drawing, ~~characterized in;~~ said steel wire preformed to have a minimum radius of curvature of 10 to 60 times its diameter, that a tensile strength TS (N/mm²) of the steel wire satisfies following formula,

$$TS \geq 2250 - 1450 \log D \quad (1)$$

wherein D is the diameter of the steel wire in mm and log means common logarithm,

and that repeated torsion value RT (turns/100D) of the steel wire, which is defined as sum of forward twisting and reverse twisting given until a crack is formed on a steel wire in a test wherein a steel wire is subjected to a repetition of forward twisting equivalent to 3 turns per 100D and reverse twisting to the original state with the axis of the steel wire kept straight, satisfies following formula:

$$\log RT \geq 2 - 0.001 \{TS - (2250 - 1450 \log D)\}. \quad (2)$$

2. (Amended) A steel wire according to claim 1, having tensile strength TS (N/mm²) satisfying following formulas:

$$TS \geq 2750 - 1450 \log D. \quad (3)$$

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6. (Amended) A method of manufacturing a steel wire according to claim § 8, wherein ϵ at the final die is set from 3.5 to 4.2.

7. (Amended) A method of manufacturing a steel wire according to claim § 8, wherein a bending operation with tension is applied to the steel wire drawn through the final die.

Claims 8-12 are added as new claims.